


1. 2016-1

Circle or cross: "T" if True – "F" if False.

T / F A service-mark is a mark to identify a service rather than a product. For example MGM (Metro-Goldwyn-Mayer) uses the sound of a lion's roar. 

T / F Regular Expression:

```
^[aiueo].[aiueo]$
```

will match this following string:

```
sate satu
```

T / F Free software is always free of charge.

T / F Open Source Software is not always free of charge.

T / F There are many Free Software licenses, however, there is only one copyleft license, i.e. the GNU / General Public Licenses.

T / F The output of script:

```
echo a b c d | echo a b c d
```

is

```
a b c d
a b c d
```

T / F The output of script:

```
for II in A B C
do
    echo X$II
done
```

is

```
A
B
C
```

2. 2016-2a

Circle or cross: "T" if True – "F" if False.

- T / F** EULA (End User License Agreement) is an example of a non-free software license.
- T / F** You don't own the propriety software you have bought.
- T / F** Public Domain software is not Free Software.
- T / F** Free Software is not always Copy-left.
- T / F** "[^c]at" matches all strings matched by "_at" except "cat".
- T / F** "[a-z0-9]" matches any single letter or any single digit.

3. 2016-2b

These following are some scripting examples. Fill remaining empty "output" cells.

Script (date=19 Oct 2016)	Output
<code>echo "1 2 3 4 5" awk '{print \$1 " " " \$5}'</code>	
<code>date +"%d %b %Y"</code>	
<code>echo abc tr '[a-z]' '[A-Z]'</code>	
<code>echo 0123456789 cut -c5-9</code>	
<code>VAR="hallo" case "\$VAR" in hallo) echo "Hallo too!" ;; *) echo "What?" ;; esac exit 0</code>	
<code>date +"%d %b %Y" awk '{print \$2 " " " \$1 ", " \$3}'</code>	
<code>% ID=VWXYZ % echo "\$ID" cut -c1-3 tr '[a-z]' '[A-Z]'</code>	
<code>VAR="hello" case "\$VAR" in hallo) echo "Hallo too!" ;; *) echo "What?" ;; esac exit 0</code>	

4. 2017-1

Circle or cross: "T" if True – "F" if False.

- T / F** Free Software means software you can get for free (gratis).
- T / F** According to the Free Software Movement, free software developers should never be paid.
- T / F** Free Software never has a license.
- T / F** The Open Source Initiative (OSI) agrees with the Free Software Foundation (FSF) about how to promote the (Free or Open Source) software.
- T / F** Both Free Software Licenses and Open Source Licenses may not discriminate against anyone. Giving everyone freedom means giving evil people freedom, too.
- T / F** You don't own software, you just get a license to use software.
- T / F** Public Domain Software is Free Software.
- T / F** The Free Software Movement hates Microsoft and consider it the Great Satan.
- T / F** Copyleft is method to keep a free-software – and its modification – to be free.
- T / F** Most free software projects are developed by a single developer (or with no contributor).

Shell Script	
<pre> 001 #!/bin/bash 002 # (c) 2017-2019 Rahmat M. Samik-Ibrahim 003 # This is a free script, lah! 004 # REV02: Tue Feb 19 19:27:58 WIB 2019 005 # START: Wed Mar 29 17:28:20 WIB 2017 006 # ===== 007 # cut remove sections from each line of files 008 # cut -c select only these characters 009 # sha1sum compute and check SHA1 message digest 010 # tr translate or delete characters 012 isADigit() { 013 [[\$VARIABLE =~ \$REGEX]] { 014 TEXT1="VARIABLE \$VARIABLE is not a digit." 015 return 016 } 017 [[\${#VARIABLE} =~ \$TEN]] && { 018 TEXT1="VARIABLE \$VARIABLE has 10 digits." 019 return 020 } 021 TEXT1="VARIABLE \$VARIABLE has no 10 digits." 022 }</pre>	<pre> 023 024 ONE='1' 025 TEN='10' 026 REGEX='^[0-9]+\$' 027 VARIABLE='1234567892' 028 HASH='echo "\$VARIABLE" sha1sum' 029 echo "\$HASH" 030 isADigit 031 TEXT2='echo "\$HASH" cut -c1-3' 032 TEXT3='echo "\$TEXT2" tr ' [a-z]' ' [A-Z]' ' ' 033 echo "\$TEXT1" 034 echo "\$TEXT2" 035 echo "\$TEXT3" 036 exit 0</pre>
Script Output (Line 029, 033, 034, 035):	
5a3ce516f19aa888e8fd3e80e7d7cb0320253d25 -	

5. 2017-2

According to the Free Software Foundation (FSF), (01) terms allow the software users to run the software for any purpose as well as to study, change, and distribute the software and any adapted versions. (02) software has absolutely no ownership such as copyright, trademark, or patent. (03) software requires that information necessary for reproducing and modifying the work must be made available to recipients of the software. There is a difference between the terms (04) and (05): it is possible to use (06) code in (07) projects, but the inverse is not allowed. (08) protect the expression of ideas, whereas, (09) is a right to exclude others from making, using, or selling an invention.

Match the number of the sentence above with these following phrases:

[] Copyleft	[] Copyrights	[] Free Software	[] Free Software
[] Free Software	[] Open Source	[] Open Source	[] Public Domain [] Patent

What will be the output of these following "sed" commands? Consider, the content of `thefile.txt` is:

Sukma's house is 10 km away.

```
$ sed -e s/"km "/"miles "/" thefile.txt
```

```
$ sed -e s/"km "/"miles "/g thefile.txt
```

```
$ sed -e s/km/miles/g thefile.txt
```

```
$ sed -e s/[km]/miles/g thefile.txt
```

6. 2018-1

(01) is the most famous open-source operating system, while (02) is a well-known example of the opposite closed-source approach. The Free Software Foundation (03) the software to encourage sharing rather than (04) it. An Operating System provides certain services including user-interfaces like: (05) interface, (06) interface, and (07) interface. A (08) is a program designed to be run by a command-line interpreter. The (09) or (10) is an example of a command-line interpreter.

Match the number of the sentence above with these following phrases:

<input type="checkbox"/> bash	<input type="checkbox"/> copyright	<input type="checkbox"/> Bourne-Again shell	<input type="checkbox"/> Command-Line	<input type="checkbox"/> copyleft
<input type="checkbox"/> Batch	<input type="checkbox"/> Graphical User	<input type="checkbox"/> Microsoft Windows	<input type="checkbox"/> shell script	<input type="checkbox"/> Linux

What is the output of this following shell-script:

```
#!/bin/bash
# (c) 2018 This's a free script
echo "START"
for II in "SATU DUA TIGA"
do echo $II ; done
for II in SATU DUA TIGA
do echo $II ; done
echo "STOP"
```


7. 2018-2 (81%)

Both (01) operating systems and (02) operating systems are available in source-code format. Free software not only makes (03) available but also is licensed to allow (04), (05) and (06). (07), (08) and (09) are examples of popular open-source systems. An advantage of working with open-source operating systems is their (10).

Match the number of the sentence above with these following phrases:

<input type="checkbox"/> diversity (50%)	<input type="checkbox"/> free (100%)	<input type="checkbox"/> FreeBSD (100%)	<input type="checkbox"/> GNU/Linux (100%)
<input type="checkbox"/> modification (100%)	<input type="checkbox"/> no-cost use (50%)	<input type="checkbox"/> open-source (100%)	<input type="checkbox"/> redistribution (90%)
<input type="checkbox"/> Solaris (100%)	<input type="checkbox"/> source code (80%)	<input type="checkbox"/> —	<input type="checkbox"/> —

What is the output of this following shell-script (74%):

```
#!/bin/bash
# (c) 2018 This's a free script
VAR="talas"
echo "$VAR"
KALIMAT="Keladi tidak sama dengan $VAR"
echo "$KALIMAT"
echo "$KALIMAT" | gawk '$5 ~ /s$/ {print $1}'
```


8. 2019-1 (74.3%) (Ref: Schilberschatz et.al.)

- (01) is a software that is licensed on a subscription basis.
 - (02) is a software stack ready for application use.
 - (03) provides hardware, storage, servers, and software over the network.
 - (04) response should be guaranteed within a specified timing constraint.
 - (05) is an interface for user-level processes to request services from the kernel of an operating system.
 - (06) is also called a Virtual Machine Manager (VMM).
 - (07) allows Operating Systems to run as applications within other Operating Systems.
 - (08) allows applications compiled for one CPU to run on another CPU.
 - (09) is a type of computing that delivers infrastructures, platforms, and applications "as a service" across a network.
- "Free Software" refers to freedom of use, not (10). Both (11) operating systems and (12) operating systems are available in source-code format rather than as compiled binary code.

Match the number(s) in the sentence above with these following phrases:

- | | | | |
|---|--|---|---|
| <input type="checkbox"/> CLOUD COMPUTING (77%) | <input type="checkbox"/> EMULATION (66%) | <input type="checkbox"/> FREE (87%) | <input type="checkbox"/> HYPERVISOR (77%) |
| <input type="checkbox"/> IAAS (66%) | <input type="checkbox"/> OPEN-SOURCE (88%) | <input type="checkbox"/> PAAS (66%) | <input type="checkbox"/> PRICE(89%) |
| <input type="checkbox"/> REAL TIME SYSTEM (87%) | <input type="checkbox"/> SAAS (62%) | <input type="checkbox"/> SYSTEM CALLS (80%) | <input type="checkbox"/> VIRTUALIZATION (64%) |

What is the output of this following shell-script (75%):

```
#!/bin/bash
# (c) 2019 0324 2110 This is a free script
TIGA=3
ANGKA="1 2 \ $TIGA"
echo "START"
echo "ANGKA"
echo "$ANGKA"
echo "$ANGKA" | gawk '/TIGA/ {print $1, $2}'
echo "STOP"
```


9. 2019-2 (57.1%)

- (01) is a software that is licensed on a subscription basis.
- (02) is a software stack ready for application use.
- (03) provides hardware, storage, servers, and software over the network.
- (04) response should be guaranteed within a specified timing constraint.
- (05) is an interface for user-level processes to request services from the kernel of an operating system.
- (06) is also called a Virtual Machine Manager (VMM).
- (07) allows Operating Systems to run as applications within other Operating Systems.
- (08) allows applications compiled for one CPU to run on another CPU.
- (09) is a type of computing that delivers infrastructures, platforms, and applications "as a service" across a network.

Free software is sometimes referred to as (10) software. MacOS contains a(n) (11) kernel named Darwin. Microsoft Windows is (12) software.

[] CLOUD COMPUTING (76%)	[] EMULATION (17%)	[] OPEN-SOURCE (20%)	[] HYPERVISOR (80%)
[] IAAS (71%)	[] PROPRIETARY (47%)	[] PAAS (66%)	[] LIBRE (27%)
[] REAL TIME SYSTEM (83%)	[] SAAS (56%)	[] SYSTEM CALLS (77%)	[] VIRTUALIZATION (13%)

```
001 #!/bin/bash
002 # (c) 2019 10251314 This is a free script
003
004 LINE1==" BEGIN"
005 LINE2="TESTING regex using awk"
006 LINE3="TESTING REGEX using awk"
007 LINE4==" = END"
008
009 echo $LINE1
010 echo $LINE2 | awk '/regex/{print $1}'
011 echo $LINE3 | awk '/regex/{print $1}'
012 echo $LINE2 | tr [A-Z] [a-z] | awk '/regex/{print $1}'
013 echo $LINE3 | tr [A-Z] [a-z] | awk '/regex/{print $1}'
014 echo $LINE4
015
016 exit
```